

DERWENT-ACC-NO: **1993-309151**

DERWENT-WEEK: 199339

COPYRIGHT 2009 DERWENT INFORMATION LTD

TITLE: New nonionic surfactants for use as emulsifiers,
antifogging agents, antistatic agents, detergents etc.
obtd. by reacting glucono delta-lactone with prim. or
sec. amine

INVENTOR: NAKAMURA Y; TOMIHARA K

PATENT-ASSIGNEE: TOHO CHEM IND CO LTD[TOHR]

PRIORITY-DATA: 1992JP-058786 (February 13, 1992)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
<u>JP 05221946</u> A	August 31, 1993	JA

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
<u>JP 05221946</u> A	N/A	1992JP-058786	February 13, 1992

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	B01F17/38	20060101
CIPS	B01F17/56	20060101
CIPS	C07C231/02	20060101
CIPS	C07C235/06	20060101
CIPS	C11D1/52	20060101

ABSTRACTED-PUB-NO: **JP 05221946** A

BASIC-ABSTRACT:

Nonionic surfactants are of formula (1); (where R = 8-22C alkyl gp., alkenyl gp.; R' = H or methyl gp.).

Preparation of surfactant (1) comprises reacting glucono delta-lactone with a prim. amine or sec.-amine of formula RR'NH.

USE/ADVANTAGE - (1) have high fog resistance, less toxicity and good emulsification and detergent properties, and can be used safely. They can be used broadly as emulsifiers, dispersants, anti-fogging agents, antistatic

agents, detergents etc.

In an example, a four-necked flask equipped with a thermometer and a stirring device was charged with 187 g (1.05 mol.) glucono delta-lactone, 184 g (1 mol.) laurylamine and 500 g DMF. The mixt. was stirred for t hours at 90 deg.C. The reaction mixt. was cooled to 50 deg.C to cause pptn. of crystals. The crystals were collected using a glass filter, and washed with 2 litres of ethyl ether, followed by drying at 40 deg.C for 5 hours at 5 mmHg to afford 358 g white powder. The amine value and hydroxyl values were respectively 0.3 and 775.0. Polyester tuft fabric was immersed in a 1% aq. soln. of the surfactant (1), which was squeezed to 80%, followed by drying in air. The surface electric resistance of the treated fabric at 65% R.H was 1.2×10^9 ohm, which means a good antistatic effect against 2.3×10^{15} ohm observed with the blank.

TITLE-TERMS: NEW NONIONIC SURFACTANT EMULSION ANTIFOG AGENT ANTISTATIC
DETERGENT OBTAIN REACT GLUCONO DELTA LACTONE PRIMARY SEC AMINE

ADDL-INDEXING-TERMS:
DISPERSANT

DERWENT-CLASS: D25 E16

CPI-CODES: D11-A03; D11-D; E10-A07;

CHEMICAL-CODES:
Chemical Indexing M3 *01*
Fragmentation Code
H4 H404 H484 H721 H8 J0 J011 J3 J371 M210
M211 M220 M221 M222 M223 M224 M225 M226 M231 M232
M233 M273 M281 M282 M314 M321 M332 M344 M349 M381
M391 M416 M620 M710 Q273 Q341 Q603 Q616
Markush Compounds
9339D2001

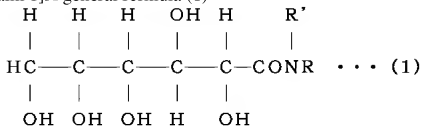
UNLINKED-DERWENT-REGISTRY-NUMBERS: 0572S; 1064S

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: 1993-137505

CLAIMS

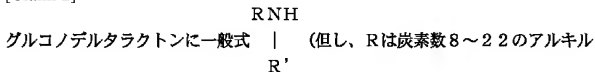
[Claim(s)]

[Claim 1] A general formula (1)



A new nonionic surface active agent shown by (however, R shows a hydrogen atom or a methyl group, respectively, as for an alkyl group of the carbon numbers 8-22, an alkenyl group, and R').

[Claim 2]



a basis, an alkenyl group, and R' -- a hydrogen atom or a methyl group -- respectively -- being shown -- a process of a new nonionic surface active agent making primary amine or the second class amine shown react, and obtaining a compound of a general formula (1).

DETAILED DESCRIPTION

[Detailed Description of the Invention]

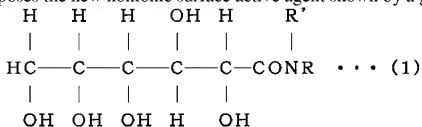
[0001]

[Industrial Application] This invention relates to a new nonionic surface active agent and the still more detailed new nonionic surface active agent of a polyhydric alcohol derivative.

[0002]

[Description of the Prior Art] Although fatty acid ester, such as glycerin, polyglycerin, sorbitan, and a sugar, is known as a nonionic surface active agent which does not contain ethyleneoxide and it has been conventionally used for an emulsifier, a dispersing agent, the antifogger of a synthetic resin, etc., a performance top is necessarily unsatisfying.

[0003] This invention persons reach this invention variously about the surface-active agent of a polyhydric alcohol derivative system from this viewpoint as a result of examination, and this invention proposes the new nonionic surface active agent shown by a general formula (1).



(However, as for R, the alkyl group of the carbon numbers 8-22, an alkenyl group, and R' show a hydrogen atom or a methyl group, respectively.)

[0004] The new nonionic surface active agent of this invention to 1 mol of glucono delta lactones Octylamine, Dodecyl amine, lauryl amine, Millis Chill Amin, palmitylamine, Primary amine, such as stearylamine, behenyl amine, and oleylamine, Decyl monomethylamine, lauryl monomethylamine, milli still monomethylamine, Although it is compoundable by ring breakage AMAIDO-ization to which 1 mol of the second class amine, such as palmityl monomethylamine, stearyl monomethylamine, and oleyl monomethylamine, is made to react, Usually, for obtaining a compound with high purity, 1 mol or more of glucono lactone is used to amine, After carrying out temperature up to 70-110 ** using solvents, such as dimethyl form AMAIDO, glycerin, isopropanal pyrene glycol, and butyl cellosolve, and performing a reaction for 1 to 8 hours, it is desirable to cool, to deposit a crystal, to wash the crystal and to dry.

[0005] Toxicity and skin irritation can use very low the nonionic surface active agent of this invention obtained in this way for extensive uses, such as an emulsifier, a dispersing agent, an antifogger, a spray for preventing static electricity, and a detergent.

[0006]

[Example] Next, the example of this invention is shown.

[Work example 1] A thermometer and an agitating device to attached 4 mouth KORUBEN 1.05 mol of glucono delta lactone 187gr, 1 mol of lauryl amine 184gr and dimethyl form AMAIDO 500gr are taught, It agitated at 90 ** for 5 hours, and it cooled at 50 ** after that, the crystal was deposited, and it filtered using the glass filter, washed using 2 l. of ethyl ether, and dried by 40 ** and 5mmHg after that for 5 hours, and the white powder 358g was obtained. This article was the amine value 0.3 and the hydroxyl value 775.0. As a result of conducting ultimate analysis of this article, they were C:59.7%, H:9.9%,

N:3.9%, and O:26.5%. Polyester taffeta cloth was immersed in the 1% solution of this article, and it extracted to 80%, and the surface electric resistance in 20 ** of the air-dry cloth and 65%R.H. is a 1.2×10^9 ohm, and the antistatic effect outstanding as compared with a blank 2.3×10^{15} ohm was acquired. [0007]

[Work example 2] Like Example 1, 196 g of 1.1-mol glucono delta lactones, 283 g of stearyl monomethylamine, Teach 4 mouth KORUBEN 800 g of dimethyl form AMAIDO, and it agitates at 95 ** for 4 hours, It cooled at back 60 **, and the crystal was deposited, and it filtered using the glass filter, and dried by washing, back 40 **, and 5mmHg for 5 hours using 2 l. of ethyl ether, and the white powder material 558g was obtained. This article was the amine value 0.2 and the hydroxyl value 608.5. As a result of conducting ultimate analysis of this article, they were C:65.1%, H:11.9%, N:3.0%, and O:20.0%.

[0008] Although this article did the patch test of the upper arm part of an arm by five persons' subject for 24 hours using what **** acute toxicity LD-50 in the mouse was not less than 5g/kg, and immersed cotton gauze cloth in 1% of this article solution, was extracted to 100%, and was dried, abnormalities were not accepted at all. 5 g of this article and 20 g of beef tallow were mixed, temperature up was carried out to 90 **, 90 ** warm water was added gradually, and the stable emulsion was obtained. [0009]

[Examples 3-6] Like Example 1 and Example 2, as shown in the 1st table, the compound of Examples 3-6 was compounded and the result like the 2nd table was obtained.

[0010]

第1表：実施例3～6の合成

実施例 No.	使用アミン	ラクトン／アミン のモル比	合成温度／時間 ℃／H r s	使用溶剤
3	パルミチルアミン	1.1／1.0	95／5	BC *1
4	ベヘニルアミン	1.1／1.0	98／6	DMF*2
5	オレイルモノメ チルアミン	1.05／1.0	105／4	DMF*2
6	ステアリルアミン	1.1／1.0	95／3.5	DMF*2

* 1：ブチルセロソルブ、* 2：ジメチルフォルムアマイド

[0011]

第2表：実施例3～6の結果

実施例 No.	外 観 (20℃)	アミン価 mgKOH/g	水酸基価 mgKOH/g	元素分析 %			
				C	H	N	O
3	白色粉末	0.1	669.7	63.0	10.9	3.3	22.8
4	白色粉末	0.2	448.5	66.8	11.4	2.7	19.1
5	白色粉末	0.1	612.1	65.3	10.9	3.2	20.6
6	白色粉末	0.1	628.4	64.4	11.0	3.1	21.5

[0012][Fog resistance test result] Compound of Example 3 Two copies, polyvinyl chloride resin 100 copies, dioctyl phthalate 400 copies, five copies of DOA, Cd system stabilizer Two copies were mixed and the film was created with a baby roll. Although put 5 ** water into the inclination box, the film was stretched, the outside temperature was kept at 20 ** and fog resistance was evaluated, the film after 60 minutes was transparent, and the antifogger additive-free film examined simultaneously has bloomed cloudy, and was not able to see an inside.

[0013][Toxic test result] **** toxicity LD-50 in the mouse of the compound of Example 4 was not less than 5g/kg.

[Test result of emulsification power] After taking the compound 5g and the hydrogenated castor oil 20g of Example 4 to the beaker and carrying out temperature-up mixing at 90 **, dropping mixing of the 90 ** warm water 75g was carried out gradually, and the stable emulsion was obtained.

[0014][Test result of a detergency] The 0.5% solution of the compound of Example 5 was kept at 40 **, the cotton cloth 10g to which 2% of beef tallow was made to adhere was added with the bath ratio 1:30, and the rabble agitated and washed for 5 minutes. When beef tallow of cleaning cloth was measured by the ether extraction method, it was the deposit efficiency of 0.08%.

[0015]

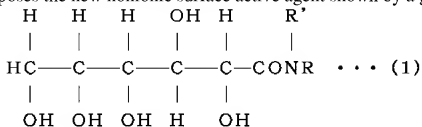
[Effect of the Invention]The surface-active agent of this application has the outstanding surface activity so that test results, such as the above fog resistance, toxicity, emulsification power, and a detergency, may see, and being a safe surface-active agent is admitted to a human body.

[Translation done.]

PRIOR ART

[Description of the Prior Art]Although fatty acid ester, such as glycerin, polyglycerin, sorbitan, and a sugar, is known as a nonionic surface active agent which does not contain ethyleneoxide and it has been conventionally used for an emulsifier, a dispersing agent, the antifogger of a synthetic resin, etc., a performance top is necessarily unsatisfying.

[0003]This invention persons reach this invention variously about the surface-active agent of a polyhydric alcohol derivative system from this viewpoint as a result of examination, and this invention proposes the new nonionic surface active agent shown by a general formula (1).



(However, as for R, the alkyl group of the carbon numbers 8-22, an alkenyl group, and R' show a hydrogen atom or a methyl group, respectively.)

[0004]The new nonionic surface active agent of this invention to 1 mol of glucono delta lactones Octylamine, Dodecyl amine, lauryl amine, Millis Chill Amin, palmitylamine, Primary amine, such as stearylamine, behenyl amine, and oleylamine, Decyl monomethylamine, lauryl monomethylamine, milli still monomethylamine, Although it is compoundable by ring breakage AMAIDO-ization to which 1 mol of the second class amine, such as palmityl monomethylamine, stearyl monomethylamine, and oleyl monomethylamine, is made to react, Usually, for obtaining a compound with high purity, 1 mol or more of glucono lactone is used to amine, After carrying out temperature up to 70-110 ** using solvents, such as dimethyl form AMAIDO, glycerin, isopropanal pyrene glycol, and butyl cellosolve, and performing a reaction for 1 to 8 hours, it is desirable to cool, to deposit a crystal, to wash the crystal and to dry.

[0005]Toxicity and skin irritation can use very low the nonionic surface active agent of this invention obtained in this way for extensive uses, such as an emulsifier, a dispersing agent, an antifogger, a spray for preventing static electricity, and a detergent.

[Translation done.]